



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,360	03/01/2004	Kenneth Kay Smith	10014266-1	9368
22879	7590	05/01/2007	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			BAKER, STEPHEN M	
		ART UNIT	PAPER NUMBER	
		2112		
		MAIL DATE	DELIVERY MODE	
		05/01/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/790,360	SMITH ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Stephen M. Baker	2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 12 February 2007.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-15 and 17-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-15 and 17-27 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Objections*

1. Claims 14-17 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form.

Regarding claim 14, a Reed-Solomon code, required by claim 13, is inherently a "linear block code" and so no further limit is apparent.

Regarding claim 15, a Reed-Solomon code, required by claim 13, is inherently a "cyclic redundancy check code" and so no further limit is apparent.

Regarding claim 17, a Reed-Solomon code, required by claim 13, is inherently a "burst-correcting code" and so no further limit is apparent.

2. Claims 7 and 9 are objected to because of the following informalities:

In claim 7, "wherein the number of second parity symbols which is greater than a number of the first parity symbols generated" apparently should be "wherein the number of second parity symbols generated is greater than the number of first parity symbols generated."

In claim 9, "wherein the number of the second parity symbols which is greater than a number of the first parity symbols generated" apparently should be "wherein the number of second parity symbols generated is greater than the number of first parity symbols generated."

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-4, 11-15 and 17-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,772,385 to Ohyama *et al* (hereafter "Ohyama") in view of U.S. Patent No. 5,805,564 to Kobayashi *et al* (hereafter "Kobayashi").

Ohyama discloses arrangements for decoding a standard Reed-Solomon "product code" (Fig. 33) used in DVDs. In accordance with the DVD standard format, the inner code parity (PI) is ten bytes and the outer code parity (PO) is sixteen bytes, hence the PO encoding "has a higher capability" than the PI encoding. Ohyama shows (Fig. 2) "first and second decoders" (10, 12) that are "configured to recover" the original data used to generate the product code.

Ohyama's first decoder of course corrects all errors that it can correct. Ohyama's second decoder of course also corrects errors, presumably errors not corrected by the first decoder. Such operation of first and second decodings shown by Ohyama is common to all product code decoding arrangements, in other words. As described by Ohyama with regard to Fig. 2 (column 16, lines 44-47), when error-check results indicate no errors after correction by PI-decoding (first decoding) or PO-decoding (second decoding), the original data can be transferred to the host without further decoding. Accordingly, Ohyama teaches a decoding arrangement "wherein the second

Art Unit: 2112

decoder recovers the information encoded by the second encod(ing) ... only if the first decoder cannot recover the information."

Ohyama does not show the arrangements for PI encoding and PO encoding required to generate DVD product code, and thus does not show "first and second encoders" corresponding to the PO code and PI code.

Kobayashi shows (Fig. 8) a conventional product coding arrangement consisting of first and second encoders (48A, 48B) for generating a product code. Kobayashi's encoding arrangement is minimal for generating a product code of two different codes using dedicated (i.e. non-reconfigurable) hardware decoders, which encoders are themselves minimal encoders for being non-reconfigurable. Kobayashi also demonstrates in context of other cited prior art that the orderings of inner and outer code operations in encoding and decoding is selectable. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement, by means of conventional "first and second encoders," the product code encoding used to generate the product code decoded by Ohyama. Such an implementation would have been obvious because Kobayashi's product coding arrangement is conventional for encoding a product code using dedicated (i.e. minimal) encoders.

Regarding claims 2 and 4, the recited limitations are generic to all product codes.

Regarding claim 3, 21 and 24, the recited limitations are generic to all product code encodings.

Art Unit: 2112

5. Claims 1-15 and 17-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,311,522 to Murakami (hereafter "Murakami") in view of Kobayashi.

Murakami discloses arrangements for decoding a Reed-Solomon product code in a magnetic tape storage device. Murakami's inner code parity is a "second code" with eight parity symbols and Murakami's outer code is a "first code" with four parity symbols, hence Murakami's "second code" encoding "has a higher capability" than Murakami's "first code" encoding. Murakami shows (Fig. 9) "first and second decoders" (inner code correction 4, outer code correction 6) that are "configured to recover" the original data used to generate the product code. As described by Murakami (column 2, lines 63-68) conventional decoding of the product code involves performing outer code correction processing only when inner code correction processing indicates that errors remain. Accordingly, Murakami describes as conventional a decoding arrangement "wherein the second decoder recovers the information encoded by the second encod(ing) ... only if the first decoder cannot recover the information."

Kobayashi shows (Fig. 8) a conventional product coding arrangement consisting of first and second encoders (48A, 48B) for generating a product code. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement, by means of conventional "first and second encoders," the product code encoding used to generate the product code decoded by Murakami. Such an implementation would have been obvious because Kobayashi's product coding arrangement is conventional and minimal for encoding with dedicated encoders.

Regarding claims 2 and 4, the recited limitations are generic to all product codes.

Regarding claim 3, 21 and 24, the recited limitations are generic to all product code encodings.

Regarding claims 5-10, in one second decoding operational mode described by Murakami, only remaining errors as indicated by the inner code correction are corrected by the outer code correction (column 5, lines 25-34).

### ***Response to Arguments***

6. Applicant's arguments filed 12 February 2007 have been fully considered but they are not persuasive.

Regarding the rejections based on Ohyama and Kobayashi, applicant incorrectly asserts that Ohyama teaches away from the invention, presumably referring to the invention as recited in the claims rejected based on Ohyama, and incorrectly suggests that any hindsight is inappropriate. Regarding applicant's arguments directed to the correction operations of the first and second decoders, arguments based on ignoring essential concepts of product coding cannot be considered persuasive. The motivation to realize a required encoding using a conventional encoding arrangement cannot be considered to involve impermissible hindsight.

Regarding the rejections based on Murakami and Kobayashi, applicant is apparently, for reasons unknown, confused regarding which codes are described as the first and second codes in the rejection based on Murakami.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques H. Louis-Jacques can be reached on (571) 272-6962. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Stephen M. Baker  
Primary Examiner  
Art Unit 2112

smb